

REMARKS

Claims 1-35 are pending. All claims are under examination. Only claim 1 is here amended. All other claims are in their original form as filed. All pending claims, other than claim 1, are dependent on claim 1 either directly or indirectly. Therefore the present amendments to claim 1 make all pending claims patentable.

Issues Under 35 U.S.C. §102

The rejection of claims 1, 4 and 35 as anticipated by USP 3,947,423 (Hills) is traversed but has been rendered moot by the present amendments to claim 1.

The rejection of claims 1, 3, 5, 6, 22, 23, 24, and 35 as anticipated by WO97/31925 (Bright) is traversed but has been rendered moot by the present amendments to claim 1.

In order to clarify the difference between the present invention and the cited references, claim 1 has been amended by excluding "bis((1-oxo-2,6,7-trioxa-1-phosphabicyclo[2.2.2]-oct-4-yl)methyl) 2,5-dibromoterephthalate" and "1,4-cyclohexanedimethanol bis(diaryl phosphate)" from the phosphorus-containing compound, based on the fact that these compounds are not employed in any example in the specification as filed.

Claim 1 has also been amended by excluding: "(1-oxo-2,6,7-trioxa-1-phosphabicyclo[2.2.2]-oct-4-yl)methyl benzoate, (1-oxo-2,6,7-trioxa-1-phosphabicyclo[2.2.2]-oct-4-yl)methyl cyclohexanecarboxylate, tris(tricyclo[5.2.1.0^{2,6}]decane) phosphate, 2-carboxy-3-diphenylphosphoroxynorbornane, and 3-diphenylphosphoroxynorbornane" from the phosphorus-containing compound. This is based on the fact that these compounds are not employed in any examples of the specification as filed.

Hills discloses in claim 1 a flame-retardant polyester composition comprising a linear saturated, fiber-forming polyester and from 5 to 25% by weight of bis-((1-oxo-2,6,7-trioxa-1-phosphabicyclo[2.2.2]-oct-4-yl)methyl)2,5-dibromoterephthalate as the flame retardant additive, based on the combined weight of polyester and said flame-retardant additive. Hills also states:

"The novel flame-retardant compound of the present invention, bis((1-oxo-2,6,7-trioxa-1-phosphabicyclo[2.2.2]oct-4-yl)methyl) 2,5-dibromoterephthalate meets all these important criteria and is particularly suitable for use in connection with the melt spinning process for producing polyester fibers" (col. 2, lines 56-61).

As the criteria, Hills states:

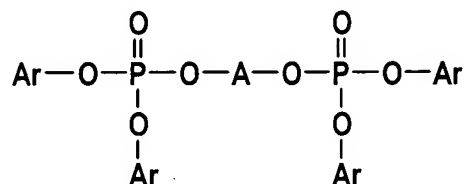
"The flame retardant must be thermally stable, it must be both unreactive with and soluble in the molten polyester...the flame retardant must have a low volatility at spinning temperatures and should not in any way interfere with the operation of the spinneret. The flame retardant should also have no substantial adverse effect upon the physical properties of the spun fiber" (col. 2, lines 47-55).

In Hills example I, the produced bis-((1-oxo-2,6,7-trioxa-1-phosphabicyclo[2.2.2]-oct-4-yl)methyl)2,5-dibromoterephthalate has a melting point >310 °C (col. 3, lines 29-44). Moreover, as shown in Hills Table 1, the LOI of the PET samples containing the bis-((1-oxo-2,6,7-trioxa-1-phosphabicyclo[2.2.2]-oct-4-yl)methyl)2,5-dibromoterephthalate is 29.2 or 37.2 depending on the percent additive of the compounds.

Bright discloses in claim 1 a composition comprising a polymer and a bisphosphate, characterized in that the bisphosphate is a 1,4-cyclohexanedimethanol bis(diaryl phosphate).

The Bight description states:

"the term '1,4-cyclohexanedimethanol bis(diaryl phosphate)s' as used herein is intended to cover a novel class of diphosphate flame retardant compounds of the general formula,



where Ar is either unsubstituted or substituted (e.g., lower alkyl substituted, halo, or alkoxy) aryl group (e.g., phenyl), A is a hydrocarbylene-containing bridging group of the formula CH₂-C₆H₄-CH₂ and is derived from 1,4-cyclohexanedimethanol. A preferred compound is one containing unsubstituted phenyl as Ar, namely, 1,4-cyclohexanedimethanol bis(diphenyl phosphate)." (page 1, line 24 to page 2, line 5).

In Bight example 1, the synthesized 1,4-cyclohexane dimethanol bis(diphenylphosphate) has a melting point of 70-75 °C (page 3, lines 4-

15). Moreover, in Bight example 2, the LOI of the piece comprising HIPS employing 1,4-cyclohexanedimethanol bis (diphenyl phosphate) is 20.5.

The cited references fail to disclose or teach the phosphorus-containing compounds of the present invention as claimed. The present invention is clearly both novel and non-obvious in view of the cited references.

CONCLUSION

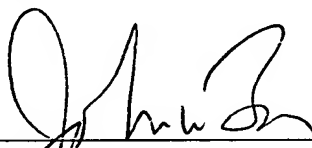
Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact David R. Murphy (Reg. No. 22,751) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.


Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By

 #32,881

Raymond C. Stewart, #21,066


RCS/DRM/enm
2224-0196P

P.O. Box 747
Falls Church, VA 22040-0747
(703) 205-8000